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brought home a considerable number of fossils that were studied at the British Museum by Dr. Bather and Mr. Bullen Newton, who came to the same conclusion that the French scientists had reached. Dr. Bather said of these fossils at a meeting of the Royal Geographical Society on June 27 (*Geog. Jour.*, Nov., 1904):

The fossils are shells and sea-urchins for the most part, and the important point about them is that they denote the existence of a rock of Eocene Age, which had not previously been found in that district. Rocks of similar age occur along the northern part of Africa towards Tripoli and Tunis. They are also known to pass through Arabia, and down towards Somaliland, but in the district south of Algeria no rocks of this age had been previously known to exist. It is true that some years ago Rohlf's mentioned that he had seen ammonites in the neighbourhood of Bilma, which is a little north-west of Chad, and Cretaceous rocks were found there by the officers of the French expedition, and also by Colonel Monteil. The existence of Eocene rocks is a point of importance, not merely as showing an extension of the sea over the southern part of the Sahara in those times, but as affording some confirmation of the views of Suess, who has supposed that, while the lower triangle of Africa was raised out of the sea at a very early geological age, all this Saharan part of Africa, together with the present Mediterranean, Arabia, and the North-West Provinces of India, formed one great Mediterranean Sea. We have here proof for the first time that this sea actually did exist down to Sokoto, or at all events a little to the north of Sokoto, forming the southern limit of the present Sahara. And what is an interesting point in these fossils, and still further confirmation of these views, is that some of the fossils that have been found are of a distinctly Indian character. One of the sea-urchins is of a kind which has hitherto only been described from Sindh. It is very interesting to learn . . . that a species of the same genus has recently been found in Egypt.

We have, therefore, some evidence—pretty good as these things go—for a definite connection through Egypt and Arabia with the North-West Provinces of India. The Cretaceous rocks which have been proved by the existence of fossils have been proved to come down from the south towards Bilma, north of Lake Chad. . . .

One of the fossils found by Colonel Monteil lay around for a long time, till Professor A. de Lapparent saw it, and recognizing its importance, had it described by a specialist in paleontology, who discovered that it was the same thing as a kind of sea-urchin which was found quite recently in Beluchistan, in fossils of Cretaceous Age there. Here we have a proof of the connection of India and the Sahara in Cretaceous as well as in the later Tertiary times.

SEMI-CENTENNIAL OF THE AMERICAN GEOGRAPHICAL SOCIETY.

The fiftieth anniversary of the incorporation of the American Geographical Society was commemorated by a dinner at Delmonico's restaurant on the 21st of December, 1904.

One hundred and fifty Fellows and their guests were present.

During the dinner views of a geographical nature were exhibited on the screen.

After dinner toasts were drunk to the President of the United States and the American Geographical Society.

Letters and telegrams of congratulation were read from the officers of the Geographical Societies of Paris, Berlin, Geneva, Vienna, Antwerp, Rome, Budapest, London, and other cities of Europe and America.

Prof. Libbey then read a concise statement of the history of the Society, which was organized May 22, 1852, with George Bancroft as President, and Henry Grinnell, Francis L. Hawks and John Zimmerman as Vice-Presidents. The Society was incorporated under a special charter, April 13, 1854.

Mr. Bancroft held office until December, 1855, when he declined re-election and was succeeded by Dr. Hawks, who remained in office until 1861. Mr. Henry Grinnell succeeded Dr. Hawks and held office until 1864, when Charles P. Daly was elected. Judge Daly was one of the earliest members of the Society, which he joined in 1855, and he continued to serve as President until his death in 1899. Judge Daly was succeeded, in 1900, by the Hon. Seth Low, who retired at the close of the year 1901. Commander Peary was elected President in January, 1903.

At this point, before introducing the speakers of the evening, President Peary said:

You have heard these unadorned facts in regard to our Society. Eighteen years ago I met Judge Daly for the first time, only to love and revere him, as did every one brought in contact with him. During the years following that time Judge Daly and the Society were constantly my friends. Only during the past two years, however, have I had the honor to be associated directly with the Society. These circumstances put me in an unusually favorable position to speak freely of the Society without incurring the criticism of self-adulation, and to speak of it in a way in which not one of the solid, unostentatious men sitting here at the table with me to-night, who have put the Society in its present position, could be prevailed upon to do.

As Prof. Libbey has just said, our Society has a beautiful home, surpassed by that of no other similar Society. That home is a monument to those who contributed of their means to make it possible, and it is a monument to the indefatigable efforts of the Building Committee (of which Henry Parish and D. O. Mills were members) which moulded the funds into the present beautiful structure.

The Society is to-day, after years of struggle, in a stable financial position. It has, through the munificence of Gen. Cullum and Judge Daly, two gold medals, not surpassed in beauty of design and intrinsic value by the medals of any other Geographical Society.

The last fifty years have been a period of growth for this Society. Now the Society is developed and equipped, and the next fifty years should be a period of activity. There is ample work on land and sea for the Society, ample room for a closer association with the business and commercial interests of this great city, ample room for a closer affiliation with the increasing geographical expansion of the Nation.

And a Society which has on its Board of Directors such men as D. O. Mills, Henry Parish, Anton Raven, and others too numerous to mention, will have availed itself of its utmost privileges and made use of its full capabilities only when it is a vitalizing influence, felt not only in this city and country, but in every portion of the civilized world where enlightened men and women feel an interest in the study of the world upon which we live.

President Peary then introduced the Hon. C. V. Fornes,

President of the Board of Aldermen, who spoke for the City of New York.

President Peary then called upon the Hon. Seth Low, ex-President of the Society, who said of the opportunities before the geographer:

The man who explores to-day does not go single-handed. He has more powerful eyes at his command than Argus ever controlled. With the scientific astronomer by his side he can pierce the vast distances of space. With the botanist and biologist of his party he can try the secrets of the invisible dust. So that the work that remains to be done may be illustrated, I think, by an expression which the artist Gibson once used in a lecture that I heard him deliver. He called the lecture "Things that I Saw at Midnight," and with his finely-trained eyes he was able to identify hosts of living creatures that I could not identify in broad daylight, if they were even then visible.

So that it is not the light that shines, but it is the eye that looks, that determines the vision. And unless it be supposed that the earth has revealed all her secrets to those who have turned its pages, with scanty equipment of scientific knowledge, I think that we may steadily and sturdily believe that the geographical exploration of the future may surpass even the accomplishments of the past in its importance to mankind. I suppose it is not a science like electricity that men are most apt to undervalue in the past, because the immense development of its application within the last twenty years has been so marked; and yet even in electricity we need to remember that it was the patient men of the past that made the modern development possible. Precisely so in this field of geography, or rather, here if anywhere, men are apt to be discouraged by the thought that everything has been accomplished. But we may be sure that there are still opportunities for the able and the gifted explorer to write his name upon the scroll of eternal fame.

President Peary then introduced Capt. A. T. Mahan, who spoke as follows on the United States and the Pacific:

Consider what it meant to America that England was the country nearest to the United States, excepting France and Spain. Search your historical knowledge and see what the effect of those facts has been upon the history of the world. What an enormous thing it is that first of all England got her foot upon this northern continent of America! Consider the development that went on from that time because of that geographical position, principally, and because of the great sea power of England, how gradually English conditions and English traditions, and the law of England and the whole social condition of England forced themselves upon these shores of America and became the leaven by which this country has been leavened. Consider how in the discretion of Providence years passed before any other peoples, except those of England, in any great numbers set their feet here upon the North American continent. Think what it was when our development was held back, as it was until the English traditions of law and political liberty had become familiarly set upon the American continent; and after that was so far established as to make it impossible to shake it, then the floodgates were opened and we have had thrown upon our shores the surplus population of Europe, but not at so early a date that it was possible to swamp the tradition of constitutional law and liberty and order in which the hope of our country consists at the present time.

Now, I say, take that lesson of the past and apply it to the United States and the Pacific at the present time, and at this period of doubt and uncertainty, when men

do not know where all these things are going to lead us, when we have crystallized public sentiment to a certain extent into imperialism and anti-imperialism, and consider what it means. And from our geographical position you will find that it must inevitably follow that the United States must go on and cannot help going on with all that the United States stands for in the matter of political liberty and political order, to impress itself upon the farther borders of the Pacific, not by conquest, but by precept and example—not by interfering with the people in any illegitimate manner, but simply by mingling with them, by being what through the Providence of God, by reason of the geographical relation of Great Britain, we have become; and what from our geographical position we almost inevitably must become toward the farther countries, not by conquest, not by settlement, but simply by association and by being what we are and ought to be. That, as I conceive, is the relation of the United States to the Pacific Ocean.

President Peary then introduced Mr. William Barclay Parsons, who spoke on the Panama Canal:

When the French Company turned over this canal to the United States Government some nine months ago, and the Commission took possession of it, it was generally expected that active work would be begun in the near future. Unfortunately, that has not been the case. But the nine months that have already gone and the other months which must yet follow before active work can be begun have not and will not be lost. The first French Company undertook to build a canal at sea-level. It finally failed, and a new company came in to take up the work. It had a broken credit and it had a concession whose life was about to expire. It was, therefore, compelled to devise, not the best canal, but to devise a canal that could be built within a certain maximum limit of money and within a very short limit of time.

The United States is not subject to either of those limitations. Unfortunately, we found that the studies of the last French Company (because the first French Company had made very few, if any) had been confessedly toward the thing that I have just described, and it therefore became necessary for this Commission to begin where the French companies were supposed to have begun many years ago, and for the first time make a thorough study of the conditions existing upon the Isthmus. Until the surveys and studies have been completed, until we know more about the geography and geology and the topography of the Isthmus, it is most premature, and, in fact, impossible, to make any statements in regard to the type of the canal. If a canal can be built without locks, so that Capt. Mahan can send his largest battleships, and so that you gentlemen of commerce can send your largest passenger and freight steamers through without the delay of locks, except the tidal lock that will have to be constructed at the Pacific end, obviously that is the best canal that can be built. But in the first place we must determine what that canal is to cost and how long it will take to build it. And when those figures have been obtained, when we have that necessary knowledge to form a judgment, then we shall have to decide whether this Government can afford to pay the bill both in time and in money.

Baron Kaneko, formerly of the Imperial Japanese Cabinet, was then introduced by President Peary. He said in part:

I should like to say a few words in connection with your President's statement that this is the fiftieth anniversary of the founding of your Society. It is a curious

coincidence. This year is the fiftieth anniversary of the first treaty signed by Commodore Perry with the Empire of Japan. So the birth of your Society is connected with the birth of our modern advancement, and it is most delightful to me to have the opportunity to say a few words on behalf of the Japanese Empire. My country and my people owe everything, all their progress and achievement, to the good offices of the United States. So that with whatever laurels of honour we are crowned they were given by you by the making of that treaty just fifty years ago, when you were founding your Society in this great City of New York. . . .

The President introduced Mr. Henry G. Bryant, President of the Philadelphia Geographical Society, who tendered the congratulations of his Society, and continued:

I believe American geographers fully appreciate the large share borne by this Society in entertaining the members attending the recent Geographic Congress, and I think that if that Congress accomplished nothing else it has brought about a better understanding between the Geographical Societies of this country. I believe that every American who attended that Congress in New York took special pride in showing to our distinguished foreign delegates the noble home of this Society, the like of which I have seen nowhere in America or in Europe, and I feel also sure that those strangers, on returning to their homes, will have a full appreciation of the dignity which our science has attained in this Western World. . . .

There are two men who have probably done more to interest me in geography than any others I have met. Both men were Presidents of this Society. I refer to the late Charles P. Daly and Commander Peary—the one the kindly and lovable gentleman and the enthusiastic student of geography, the other the gallant explorer of the Far North.

THE PRESIDENT: Ladies and Gentlemen, this closes the order of exercises for the evening. We bid you God-speed until the next dinner of the American Geographical Society.

THE INVESTIGATION OF ALASKA'S MINERAL WEALTH.*

BY

ALFRED H. BROOKS.

The developments of the last five years have shown that Alaska, as a field for mining, stands in the first rank among the possessions of the United States. Its annual gold output is now about \$8,000,000. It produces silver, copper, and coal in commercial

* Published by permission of the Director, U. S. Geological Survey.

Mr. Brooks, who is the Geologist-in-Charge of "The Division of Alaskan Mineral Resources" in the U. S. Geological Survey, read this paper before the American Institute of Mining Engineers at its Lake Superior meeting in September last. It is reproduced here because it is the authoritative presentation of the facts relating to a subject of large public interest. Mr. Brooks's data cover the subject to the close of 1903. To complete the review, readers are referred to "Notes on Topographic Surveys in Alaska, 1904," in the November BULLETIN, pp. 699-701. The accompanying map is based upon that with which Mr. Brooks illustrated his paper. A complete bibliography of the U. S. Geological Survey publications on Alaska, including maps, is printed in *Bulletin 227* issued by the Survey.—THE EDITOR.